FOH0332

INTER-OFFICE COMMUNICATION

TO: Jim Pennino, Southwest District Office

DATE: April 22, 1977

reviewed by [illegible]

FROM: BB Bob Brown, Office of Land Pollution Control, CO

SUBJECT: Disposal of plating sludges by Holbart Brothers

Introduction. Dr. Hayden has recently mailed to me a copy of his letter of March 30, 1977 which was addressed to Gray Bramble. In this letter Dr. Hayden proposed the application of metal sludges to the land. In a phone conversation between Dr. Hayden and myself, he said this was to be a one-time application which would give him additional time to work out a long term solution to the disposal of this metal sludge generated by Holbart Brothers Company. However, a one time application to land is not specifically mentioned in the letter of March 30, 1977.

Generally, I would not even consider a proposal to dispose of metal sludges by applying them to agricultural lands. However, in this case the concentration of metals such as Zn, Cu, Ni, Cd, etc. were low and I agreed to consider the proposal based on the condition that this would only be done once. After a careful study of the proposal I would have to conclude that it is difficult to say what effect Dr. Hayden's proposal would have on the land. This is discussed in detail below.

Recommendations. I would recommend that OEPA not approve Dr. Hayden's proposal for disposal of metal sludges on agricultural land. First, it is not possible to predict the consequences of Dr. Hayden's proposal. However, an OEPA approval would establish a precedent which would require us to consider even more questionable proposals on land disposal of metal sludges. Secondly, there are other environmentally sound alternatives for disposal of this waste.

Dr. Hayden should push on and quickly complete a plan for the long term disposal of this metal sludge. As a short term measure, Holbart Brothers Company could take a portion of the present sludge to IWD in Springfield, or CER in Clermont County, or ILWD in Indiana. Hopefully, the long term proposal would be completed in time to handle the major portion of the present sludge.

Land Disposal of Metal Sludges. The publications which Dr. Hayden supplied us really don't help in review of his proposal. These papers discuss disposal of sewage sludge which is considerably different from metal sludges in chemical and phytotoxic properties. For example, consider the following emperical observations that have been reported in the literature.

(1) Some reports show that the application of a few pounds per acre of heavy metal salts will be very toxic to plants. Yet, other reports show that larger quantities of metals can be applied before problems are observed.

(2) I have not seen any reports of heavy metal toxicity resulting from land disposal of sewage sludge in the United States; however, such problems are reported in Great Britan and Germany.

(3) Some zinc and copper compounds which are relatively insoluble in water (oxides, carbonates, etc.) are quite available for plant uptake.

SUMMARY OF SOLID WASTES DISCHARGED AT

HOBART BROTHERS WESTBROOK PLANT

	Material	Description	Dry Solids Amount/Year
PIT	1. Stick Electrode Subarc Flux Tublar Flux	A Mixture of Salts, Minerals & Additives (see Tables 1 & 2)	800-900 ton/yr 1.6-1.8X10^6 lbs/yr
PIT	2. Wire Dry Lube	Floor Sweep, Floor Dirt Calcium Sterate, Calcium Hydroxide	150 tons/yr 0.3 X 10^6/yr
	3. WWTP Sludge	(see Table 3)	75 - 100 tons/yr .15-.20 X 10^6 lbs/yr
DWT CONTROL	4. Wet Lube Sludge	Liquid Wire Drawing Lubricants, Emulsifiers, Detergents	200 gallons/2 wks 4.3 tons/yr 0.0087 X 10^6 lbs/yr
PIT	5. Mixer Sludge From Washout-Rod Dept.	(See Table 4)	200 gallons/2 wks 4.3 tons/yr 0.0087 X 10^6 lbs/yr
PIT	6. Dust-Baghouses	(See Tables 1 & 2)	27.5 tons/yr 0.055 X 10^6 lbs/yr
MAJORITY RECLAIMED (SOLD)	7. Descaling Operations	Iron Oxides ↓ ON ROADS	100 tons/yr (NOT SOLD) 0.20 X 10^6 lbs/yr
		TOTAL	1278 tons/yr 2.56 X 10^6 lbs/yr

TABLE 1

APPROXIMATE COMPOSITION OF ELECTRODES

0 - 10% (MINOR)	10% + (MAJOR)
Potash	Cellulose
Sodium Bicarbonate	Water Glass
Talc	Sodium Titanite
Manganese Carbonate	Rutile
Zircon	Magnetite
Iron Carbonate	Ferromanganese
Magnesite	Marble
Silica	Mica
Iron Oxide	Potassium Silicate
Baddellyite	Dolomite
Soda Ash	Kaolin Clay
~~Asbectos~~	Mineralite
Ferromolybdenum	Iron Powder
Glycerin	Fluorspar
Corn Cyrup	Feldspar
Wollastonite	
Pottassium Titanite	
Bentonite Clay	
Caustic Potash	
Bauxite	
Lye	
Calcium Silicate	
Sodium Carboxy Methyl Cellulose	
Sodium Carboxy Ethyl Cellulose	
Ferrosilicon	
Kyanite	
Manganese	
Ferrotitanium	
~~Sodium Chromate~~	
Graphite	
Nickel	
Magnesia Alba	

TABLE 2

APPROXIMATE COMPOSITION OF SUBMERGED ARC FLUXES

Minor (Less than 10%)	Major
Cryolite	Wollastonite
Silico Manganese	Silica (SiO_2)
Glass	Zirconium Oxide
Nickel Powder	Zircon
Mullite	Chromium Powder
Aluminum Oxide	Magnesium Oxide
Nepheline Syenite (SiO_2,Al_2O_3,Na_2O)	~~Potassium Silico Fluoride~~
Ferro Silicon	Manganese Dioxide
	Fluorspar
	Manganous Oxide
	Bauxite
	Leucoxene

TABLE 3

ANALYSIS OF WASTEWATER TREATMENT SLUDGE

(Sampled 1/26/77)

Analyte	Concentration-mg/g (dry solids basis)
Aluminum	0.93
Arsenic	NDL
Barium	0.003
Beryllium	0.001
Calcium	0.092
Cadmium	0.010
Copper	0.117
Chromium	0.097
Iron	400.
Lead	0.23
Magnesium	3.6
Manganese	2.4
Mercury	<0.003
Molybdenum	0.41
Nickel	0.69
Potassium	0.088
Selenium	NDL
Silver	0.003
Sodium	6.6
Tin	<0.010
Zinc	0.37

PROBABLY 50% IRON

TABLE 4

ANALYSIS OF SLUDGE FROM SETTLING TANK (ROD DEPT.)

(3/9/77)

Analyte	Concentration-mg/l
pH	8.49
Chloride	120.
Sulfate	65.
Total Suspended Solids	13,530.
Iron (total)	28.6
(soluble)	0.56
Copper (total)	0.230
(soluble)	NDL
Aluminum (total)	5.00
(soluble)	NDL
Zinc (total)	0.460
(soluble)	0.100